

USSN 10/050,390

Amendment under 37 CFR § 1.312

Remarks

A Notice of Allowance, mailed May 3, 2004, has been received by the Applicant in the above-referenced application. Claims 66-88, 151-156, 158, 160, 162-163, 168-171, 173, 177-179, 181, 185-187, 189-192, 197 and 198 have been allowed.

The present claims were elected in a requirement for restriction (06-04-03), and are directed to a semiconductor device having a lower capacitor plate formed over a texturizing layer comprising *a polymeric material*.

Claim 152¹ depends from Claim 151. Upon review of the claims, Applicant noted that Claim 152 recites a limitation (i.e., "...and the overlying conductive layer comprises an ordered array of island clusters") that more properly relates to the restricted out Embodiment II of FIGS. 3A-3F — drawn to a semiconductor device having a lower capacitor plate formed over a texturizing layer comprising *a conductive material, e.g., conductive metal*.

The Examiner is respectfully directed to the specification, for example, at page 3, line 16 to page 4, line 8 (emphasis added), which describes the two embodiments of the invention:

In another embodiment of the method, a polymeric material is deposited over the insulative layer of a container as a precursor that is converted to relief or porous structures upon ozonolysis and UV exposure, resulting in a textured layer comprising an insulative silicon oxycarbide film... The film is punch etched (e.g., RIE) to clear an opening to the underlying substrate or conductive plug at the bottom of the cell for the subsequent deposition of a conductive material (e.g., polysilicon, conductive metal), resulting in a lower electrode have an upper roughened surface.

In another embodiment of a method of the invention, a texturizing underlayer is fabricated from a conductive material prior to depositing a conductive layer to form the lower electrode. In forming the texturizing underlayer, a first conductive metal is deposited over the insulative layer of a container, a second dissimilar conductive metal is deposited over the first metal layer, and the two metal layers are annealed resulting in a textured layer comprising surface dislocations in a strain relief pattern, which is preferably a periodic and ordered array of nanostructures. A conductive metal is then deposited in gas phase over the texturizing layer whereby the depositing metal agglomerates onto the surface dislocations forming island clusters. Preferably, the surface dislocations of the texturizing layer are formed as a periodic network, and the overlying conductive layer comprises ordered arrays of metal island clusters...

¹ Claim 152 recites (emphasis added): The semiconductor circuit of Claim 151, wherein the nanostructures form periodic network, and the overlying conductive layer comprises an ordered array of island clusters.

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The Examiner is also directed to the Abstract (as amended), which summarizes the two embodiments of the invention as follows (emphasis added):

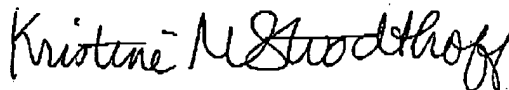
ABSTRACT

Lower electrodes of capacitors composed of a texturizing underlayer and a conductive material overlayer are provided. The lower electrodes have an upper roughened surface. In one embodiment, the texturizing layer is composed of porous or relief nanostructures comprising a polymeric material, for example, silicon oxycarbide. *In another embodiment, the texturizing underlayer is in the form of surface dislocations composed of annealed first and second conductive metal layers, and the conductive metal overlayer is agglomerated onto the surface dislocations as nanostructures in the form of island clusters.*

Accordingly, entry of this Amendment and the cancellation of Claim 152 are hereby requested. The cancellation of Claim 152 would merely clarify the claims, and would not constitute new matter or alter the scope of the allowed claims.

The Examiner is urged to contact the undersigned Attorney for Applicant if any questions should arise, and to expedite the entry of this amendment of the claims.

Respectfully submitted,



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